Final Technical Report

NASA/OAI Collaborative Aerospace Internship and Fellowship Program

NASA Cooperative Agreement

NCC3-418

June 22, 1995 - June 21, 1996

Ohio Aerospace Institute
22800 Cedar Point Road
Brook Park, Ohio 44142

August 1997

NASA/OAI Collaborative Aerospace Internship and Fellowship Program

NCC3-418

Summary

The NASA/OAI Collaborative Aerospace Internship and Fellowship Program is a collaborative undertaking by the Office of Educational Programs at the NASA Lewis Research Center and the Department of Workforce Enhancement at the Ohio Aerospace Institute. This program provides 12 or 14 week internships and 10 or 12 week fellowships for undergraduate and graduate students of science and engineering, and for secondary school teachers. Approximately 150 interns are selected to participate in this program and begin arriving the second week in May. Each intern is assigned a NASA mentor who facilitates a research assignment. An important aspect of the program is that it includes students with diverse social, cultural and economic backgrounds.

The purpose of this report is to document the program accomplishments for 1995.

August, 1997

NASA/OAI Collaborative Aerospace Internship and Fellowship Program

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Grant Close Out Report

The NASA/OAI Collaborative Aerospace Internship and Fellowship Program provides 12-14 week internships for students majoring in science or engineering. The internships provide students with introductory professional experiences to complement their academic programs. The interns are given assignments in research and development projects under the personal guidance of NASA professional staff members. In addition to the research assignment, the summer program includes a strong educational component which enhances the professional stature of the participants. The educational activities include a research symposium and a variety of workshops, lectures and short courses.

The program is explained through a chronological calendar followed by abstracts detailing the research the students participated in while at Lewis Research Center.

Nov. , 1994 — Four thousand applications for the 1995 program were distributed nation-wide.

Jan. 31, 1995 — Application Deadline. Approximately 600 applications were received. All applications were reviewed to ensure that applicants were qualified and had submitted complete application packages. Information on the applicants was then entered into the database and the applications filed.

April 1, 1995 — NASA mentors selected 154 students from the pool of applicants.

April 18, 1995 — A Mentor Workshop was held. The workshop provided information regarding effective mentoring. Forty-two (42) NASA mentors attended and participated in the workshop. The guest speaker was Ms. Cindy Forman, Personnel Management Specialist, NASA LeRC.

May 3, 1995 — A Mentor Orientation was held. The orientation provided information to mentors regarding specifics of the intern program.

May 15, 1995 — The First Student Orientation for 1995 was held. Fifty-three (53) students entered the program. The purpose of this and the two subsequent orientations is to acquaint the interns (and some mentors who could not attend the May 3 orientation) with some of the specifics of the program. Representatives of the Computer Services Division, Library Branch, and the Safety Assurance Office addressed the group.

May 24, 1995 — Follow-up Sessions were held with students who began their tenure on May 15. Students meet one-on-one with a member of the Intern Administration Team to discuss their assignment, their relationship with their mentor, the work environment, etc. These sessions are conducted to ensure that the student is satisfied with his/her research assignment.

May 25, 1995 — The first Networking Activity was held. The purpose of this activity is to give the students an opportunity to met each other and talk about their assignments, education programs, research interests, etc.

May 26, 1995 — Payday. Paychecks were distributed to all interns and high school teachers.

May 30, 1995 — The Second Student Orientation was held. Thirty-eight (38) students entered the program.

June 9, 1995 — Payday. Paychecks were distributed to all interns and high school teachers. Follow-up Sessions were held for students who began their tenure on May 30.

June 12, 1995 — Third Student Orientation. Thirty (30) students entered the program.

June 15, 1995 — The Second Networking Activity was held.

June 19, 1995 — Additional Student Orientations were held for the thirty-three (33) students/ teachers that entered the program on June 19 and in subsequent weeks.

June 20/21, 1995 — Tours. New participants were invited to tour the NASA LeRC.

June 21, 1995 — Tours. Past participants were invited to tour the Cleveland Advanced Manufacturing Program (CAMP).

June 22, 1995 — Follow-up Sessions were held for students who began their tenure on June 12.

June 23, 1995 — Professional Development Workshop. Dr. Deborah Workman presented a workshop entitled, "Constructing a Graphic Portfolio." Students who participated received valuable information regarding resume preparation and interviewing skills.
Payday. Paychecks were distributed to all interns and high school teachers.

June 30, 1995 — The Scholars' Workshop. This workshop provides a forum for the scholars to interact with each other and to discuss various pertinent issues.

July 6, 1995 — Reception. All interns, Mentors, Branch Chiefs, Division Chiefs, and Senior Management were invited to interact with one another on an informal basis to discuss education programs and assignments. Approximately two hundred-fifty (250) attended this activity which was held in the OAI Building.

July 7, 1995 — Presentation Workshop. The workshop is designed to help the interns improve their presentation skills for giving a technical presentation. Dr. Theo Keith presented a two hour lecture.
Payday. Paychecks were distributed to all interns and high school teachers.

July 11, 1995 — Annual Student/Mentor Picnic. A picnic was held which included summer interns, mentors, and several other groups. A total of two hundred (200) attended.

July 21, 1995 — R & T Briefing. Robert Ghrist, Ph.D., Princeton University, presented a lecture in conjunction with the NASA-ASEE Summer Faculty Fellowship Program. The lecture entitled "Tales from the city: Confessions of a mathematician in the real world," concerned the role of scientists and mathematicians in the plight of education in the inner city. In addition to this lecture, the interns were encouraged to attend the NASA-ASEE Summer Faculty Fellowship Program Lecture Series which occurred every Friday.
Payday. Paychecks were distributed to all interns and high school teachers.

July 28-31, 1995 — Research Symposium and Poster Session I. Provides students an opportunity to give a technical presentation in front of their peers, mentors, supervisors, etc. Students are evaluated on their presentations and given feedback. Fifty-eight (58) interns prepared posters and twenty-eight (28) interns gave oral presentations.

August 4, 1995 Payday. Paychecks were distributed to all interns and high school teachers.

August 18, 1995 Research Symposium and Poster Session II. Twenty-six (26) interns prepared posters and twelve (12) interns gave oral presentations.
Payday. Paychecks were distributed to all interns and high school teachers.

Sept. 1, 1995 Payday. Paychecks were distributed to all interns and high school teachers.

Sept. 15, 1995 Payday. Paychecks were distributed to all interns and high school teachers.

Sept. 30, 1995 Payday. Paychecks were distributed to all interns and high school teachers.

October 6, 1995 Retreat. At the end of the program, a retreat is held to review and evaluate the program in general, and specifically discuss each activity. Administrative procedures are comprehensively reviewed to ensure that the program is running as smooth as possible. Each activity is evaluated and recommendations are made so that next year's activity will be even more successful.

There is a great deal of planning, organizing, communicating, coordinating and evaluating that goes on behind the scenes prior to, during, and after the program. Beginning in January, the program team meets regularly to ensure that the program is progressing on schedule. All of these tasks require a high level of energy.

In addition, there are literally hundreds of phone calls from college representatives, students, and parents inquiring about the NASA/OAI Intern Program. Students want to know the eligibility requirements, how to apply, how they can get an application, and if they were not selected, how they can improve their chances of being selected the following year, etc.

Management and administration of the program is performed in a team-like manner. The following provides the management structure of the program.

OAI	NASA
Program Director: Theo G. Keith, Ph.D.	Program Director: Jo Ann Charleston
Program Manager: Ashanti Trent	Program Manager: Sylvia Merritt

Program Manager (NASA Interface): Rita Clement

Application

List of Interns

NASA/OAI Internship & Fellowship Program

1995 Participants

STUDENT	MAJOR	SCHOOL	ACADEMIC LEVEL
ABREU, DORA MARIE	COMP SCI/ENG	COLUMBIA U	PHD CANDIDATE
ALABI, GEORGE	MECH ENG	U CALIFORNIA-DAVIS	MASTER CANDIDATE
ARENAS, DAVID	MAT'LS/STRUCTURES	CAL POLY STATE U	MASTER CANDIDATE
BAER, TROY	AERO/ASTRO ENG	OSU	MASTER CANDIDATE
BAKER, ERIC	MAT'LS/STRUCTURES	CSU	MASTER CANDIDATE
BANKS, SHUNDRIKKA	ENVIRON SCI/ENG	GEORGIA TECH	COLLEGE SENIOR
BANSAL, GAURAV	ELEC ENG	CWRU	COLLEGE JUNIOR
BEILSTEIN, CHRISTINE	MECH ENG	OHIO NORTHERN U	COLLEGE SENIOR
BERGMAN, BRENDA	ENVIRON SCI/ENG	BOSTON C	COLLEGE SOPHOMORE
BRITTON, DERRICK	ELEC ENG	GEORGIA TECH	COLLEGE SENIOR
BROWN, TANESHA	MATH	SPELMAN C	COLLEGE JUNIOR
BRUCKNER, ERIC	ELEC ENG	CSU	MASTER CANDIDATE
BUBNICK, MARK	POLYMERS	CSU	MASTER CANDIDATE
CAMPBELL, KELLY	MECH ENG	U CONNECTICUT	COLLEGE SOPHOMORE
CANAGARATNA, GNANULAN	AERO/ASTRO ENG	OHIO NORTHERN U	MASTER CANDIDATE
CARPENTER, KEITH	COMP SCI/ENG	U AKRON	COLLEGE JUNIOR
CASTRO, PETER	MECH ENG	CWRU	COLLEGE SENIOR
CAVANAGH, MATTHEW	MECH ENG	BOSTON U	COLLEGE JUNIOR
CHANG, JANIS	PHYSICS	CA INST OF TECH	COLLEGE SENIOR
CHAO, STEPHEN	INDUSTRIAL ENG	CWRU	COLLEGE SENIOR
CHAWAN, AJAY	MAT'LS/STRUCTURES	SYRACUSE U	COLLEGE SENIOR
CHRISZT, JENNIFER	MAT'LS/STRUCTURES	CSU	MASTER CANDIDATE
CLARK, WILLIAM	ELEC ENG	TENNESSEE STATE U	COLLEGE SENIOR
CLAYTON, TARA	ELEC ENG	TENNESSEE STATE U	COLLEGE SENIOR
COLLINS, OBJARAHNAWEN	SYSTEMS ENG	HAMPTON U	COLLEGE SENIOR
COMISKEY, MICHELE	COMP SCI/ENG	U AKRON	COLLEGE JUNIOR
CONLEY, MYLES	COMP SCI/ENG	CSU	COLLEGE JUNIOR
CONNOR, PATRICK	ELEC ENG	CWRU	COLLEGE SOPHOMORE
CRANE, ELIZABETH	POLYMERS	JOHN CARROLL U	MASTER CANDIDATE
CREASON, ANGELA	ELEC ENG	OHIO NORTHERN U	COLLEGE SENIOR
DEARHOUSE, PAUL	MAT'LS/STRUCTURES	MICHIGAN STATE U	COLLEGE SENIOR
DEGENNARO, ALFRED	OTHER	CSU	HS TEACHER
DENNIS, BRIAN	AERO/ASTRO ENG	PENN STATE U	MASTER CANDIDATE
DEYLING, ANDREA	AERO/ASTRO ENG	KENT STATE U	COLLEGE SOPHOMORE
DOMONKOS, MATTHEW	AERO/ASTRO ENG	U MICHIGAN	MASTER CANDIDATE
DOMOTORFFY, KATINKA	MATH	U PENNSYLVANIA	COLLEGE JUNIOR
DOTY, MICHAEL	AERO/ASTRO ENG	U NOTRE DAME	COLLEGE SENIOR
DOWNING, KEITH	MECH ENG	U TEXAS	MASTER CANDIDATE
EL-AMIN, AALIYAH	INDUSTRIAL ENG	GEORGIA TECH	COLLEGE SENIOR
ERAUSQUIN, RICHARD	AERO/ASTRO ENG	PURDUE U	COLLEGE SENIOR
ESKRIDGE, MEVELYN	ELEC ENG	TENNESSEE STATE U	COLLEGE SENIOR
FALK, ERIC	AERO/ASTRO ENG	U NOTRE DAME	COLLEGE SENIOR
FERRARO, MENA	AERO/ASTRO ENG	IIT	MASTER CANDIDATE
FONTANES-PEREZ, MIRELSA	COMP SCI/ENG	U PUERTO RICO	COLLEGE JUNIOR
FOSTER, JOHN	PHYSICS	U MICHIGAN	PHD CANDIDATE
GARCIA, MARIBEL	ENVIRON SCI/ENG	LINCOLN WEST HS	COLLEGE FRESHMAN
GLANCY, SCOTT	PHYSICS	U EVANSVILLE	COLLEGE JUNIOR
GNEPP, ANDREI	MATH	HAWKEN HS	COLLEGE FRESHMAN
GOLDMEER, JEFFREY	MECH ENG	CWRU	PHD CANDIDATE
GRIMES, KELLY	MECH ENG	MICHIGAN TECH U	COLLEGE JUNIOR
HAIRSTON, ANITA	MAT'LS/STRUCTURES	CLEVELAND HEIGHTS HS	COLLEGE FRESHMAN
HALL, TINA	ELEC ENG	RPI	COLLEGE JUNIOR

STUDENT	MAJOR	SCHOOL	ACADEMIC LEVEL
HARPER, JOHN	AERO/ASTRO ENG	RPI	COLLEGE SENIOR
HAVELKA, PAMELA	POLYMERS	ST NORBERT C	COLLEGE SENIOR
HERMEL, THERESA	MAT'LS/STRUCTURES	NEW MEXICO INST	COLLEGE JUNIOR
HESS, ANDREA	POLYMERS	MANCHESTER C	COLLEGE SENIOR
HICKMAN, ALEXANDER	MECH ENG	MOREHOUSE C	COLLEGE JUNIOR
HICKMAN, ANDRE'	MECH ENG	MOREHOUSE C	COLLEGE JUNIOR
HIGGS, C. FRED	MECH ENG	TENNESSEE STATE U	MASTER CANDIDATE
HILL, MICHELLE	OTHER	ROCHESTER IT	COLLEGE SENIOR
HODANBOSI, CAROL	OTHER	BARBERTON HS	HS TEACHER
HOPKINS, JOSH	AERO/ASTRO ENG	U ILLINOIS	COLLEGE SENIOR
IRIS, MICHAEL	OTHER	BUG O NE GESHIG	HS TEACHER
JACOBSON, DAVID	MECH ENG	OSU	COLLEGE JUNIOR
JANSEN, MARK	MECH ENG	CSU	MASTER CANDIDATE
JOHNSON, DWAIN	MATH	OAKWOOD C	COLLEGE JUNIOR
KAHLENBERG, KERRI	ENVIRON SCI/ENG	BOWLING GREEN U	COLLEGE JUNIOR
KAJFASZ, TROY	ENVIRON SCI/ENG	U FINDLAY	COLLEGE SENIOR
KARLA, ELIZABETH	MAT'LS/STRUCTURES	U DAYTON	COLLEGE SENIOR
KEELS, WAYNE	COMP SCI/ENG	SHAW U	MASTER CANDIDATE
KELLY, ANN	POLYMERS	CSU	COLLEGE JUNIOR
KNIGHT, DONALD	OTHER	ST IGNATIUS HS	HS TEACHER
KUDLA, THOMAS	COMP SCI/ENG	WESTLAKE HS	COLLEGE FRESHMAN
LASKOWSKI, JULIA	AERO/ASTRO ENG	PARKS C	COLLEGE SENIOR
LEON, GIADIRA	ELEC ENG	RPI	COLLEGE JUNIOR
LEWIS, PRESTON	MECH ENG	ILLINOIS IT	COLLEGE JUNIOR
LIAO, WILSON	CHEMISTRY	HARVARD U	COLLEGE SOPHOMORE
LIENHARD, MICHAEL	CHEMISTRY	RPI	PHD CANDIDATE
LIN, STEVEN	ELEC ENG	STANFORD U	MASTER CANDIDATE
LYNCH, DENIS	AERO/ASTRO ENG	U NOTRE DAME	COLLEGE SENIOR
MARASIA, AMY	AERO/ASTRO ENG	U NOTRE DAME	COLLEGE SENIOR
MCGOVERN, BRAD	OTHER	ST IGNATIUS HS	HS TEACHER
MELVILLE, KRISTINA	AERO/ASTRO ENG	IOWA STATE U	COLLEGE SENIOR
METZGER, DAVID	AERO/ASTRO ENG	KANSAS STATE U	MASTER CANDIDATE
MITCHELL, JASON	AERO/ASTRO ENG	U CINCINNATI	PHD CANDIDATE
MIXON, PATRICK	ELEC ENG	GEORGIA TECH	COLLEGE JUNIOR
MUNOZ, CYNTHIA	MECH ENG	POLYTECHNIC U	MASTER CANDIDATE
MYRICK, WILBUR	ELEC ENG	PURDUE U	PHD CANDIDATE
NAVARRO, LUIS	MECH ENG	CAL STATE FULLERTON	COLLEGE JUNIOR
NGUYEN, QUYNHGIAO	MAT'LS/STRUCTURES	NOTRE DAME C OF OHIO	COLLEGE SENIOR
NJOKU, IGNATIUS	COMP SCI/ENG	RPI	COLLEGE JUNIOR
NOSS, DAWN	CHEM ENG	CWRU	COLLEGE JUNIOR
OCKUNZZI, KELLY	COMP SCI/ENG	CWRU	MASTER CANDIDATE
ORLINO, PATRICIA	CHEMISTRY	JOHN CARROLL U	COLLEGE SENIOR
ORTIZ, RONNIE	POLYMERS	CWRU	COLLEGE SENIOR
PAGE, SEAN	AERO/ASTRO ENG	SYRACUSE U	COLLEGE JUNIOR
PAGEDAR, NITIN	PHYSICS	U CHICAGO	COLLEGE SOPHOMORE
PATTERSON, DARVIN	MECH ENG	GEORGIA TECH	COLLEGE SENIOR
PEREA, RAYMOND	MECH ENG	CSU	COLLEGE SOPHOMORE
PIRELA, ERICA	CHEM ENG	ILLINOIS IT	COLLEGE SOPHOMORE
PLANTNER, ANITA	MECH ENG	CWRU	COLLEGE SENIOR
POVINELLI, MICHELLE	PHYSICS	U CHICAGO	COLLEGE JUNIOR
RAHMAN, RAHIM	MECH ENG	OSU	COLLEGE SOPHOMORE
REYES, DELFIN	ELEC ENG	RPI	MASTER CANDIDATE
RICE, BRIAN	MECH ENG	OSU	COLLEGE SENIOR
RIVERA, ANGEL	MECH ENG	U TEXAS	COLLEGE SENIOR
ROADS, CHRISTOPHER	OTHER	NORTH ROYALTON HS	HS TEACHER
SABATAITIS, JULIE	ELEC ENG	CWRU	COLLEGE JUNIOR

STUDENT	MAJOR	SCHOOL	ACADEMIC LEVEL
SALINAS, MAURICIO	MECH ENG	U TEXAS PAN AM	COLLEGE SENIOR
SALVEKAR, ATUL	ELEC ENG	CA INST OF TECH	COLLEGE SENIOR
SCHATZ, MICHAEL	COMP SCI/ENG	CWRU	COLLEGE SENIOR
SCHWARTZ, RANDY	MECH ENG	KANSAS STATE U	COLLEGE SENIOR
SEITZ, JONATHAN	CHEMISTRY	SWARTHMORE C	COLLEGE SENIOR
SHOGRIN, BRADLEY	CHEMISTRY	CWRU	PHD CANDIDATE
SIDDIQI, YUMNA	ARCHITECTURE	OHIO STATE U	MASTER CANDIDATE
SIELKEN, ROBERT	COMP SCI/ENG	TRINITY U	COLLEGE JUNIOR
SMITH, JR., ROBERT	PHYSICS	SOUTHERN U	COLLEGE SENIOR
SOKOLOWSKI, TODD	MECH ENG	OSU	COLLEGE SENIOR
SOMRAK, DANIELLE	ENVIRON SCI/ENG	OHIO NORTHERN U	COLLEGE SENIOR
SORIN, DANIEL	ELEC ENG	DUKE U	COLLEGE SENIOR
STEVENSON, CHERISSE	CHEM ENG	SPELMAN C	COLLEGE SOPHOMORE
STORM, ROGER	OTHER	FAIRVIEW HS	HS TEACHER
STULTZ, KEVIN	OPTICS	U ALABAMA	MASTER CANDIDATE
TACINA, KATHLEEN	AERO/ASTRO ENG	OSU	MASTER CANDIDATE
TALARICO, JOSEPH	CHEM ENG	CWRU	COLLEGE JUNIOR
TERRY, JASON	COMP SCI/ENG	RPI	COLLEGE JUNIOR
THOMAS, SONJA	CIVIL ENG	CSU	COLLEGE SOPHOMORE
THOMAS-OGBUJI, CHIMEZIE	COMP SCI/ENG	NORTH OLMSTED HS	COLLEGE FRESHMAN
TIDMORE, NORMAN	INDUSTRIAL ENG	OHIO U	COLLEGE SENIOR
TIMBERLAKE, JUJUAN	MATH	MOREHOUSE C	COLLEGE SENIOR
TURK, MARY	POLYMERS	JOHN CARROLL U	MASTER CANDIDATE
VAN STEENBERG, MICHELLE	MATH	U COLORADO	PHD CANDIDATE
VERTISON, TIFFANY	ELEC ENG	TENNESSEE STATE U	COLLEGE JUNIOR
VOLTZ, GERALD	OTHER	EAST TECH HS	HS TEACHER
WATERS, JOSEPH	POLYMERS	JOHN CARROLL U	MASTER CANDIDATE
WEBB, SCOTT	AERO/ASTRO ENG	PURDUE U	COLLEGE JUNIOR
WEINGARTZ, WARREN	MECH ENG	U CINCINNATI	COLLEGE SOPHOMORE
WEINSTEIN, SAMUEL	ELEC ENG	OHIO STATE U	COLLEGE SENIOR
WHITLOW, DARRYL	AERO/ASTRO ENG	U CALIFORNIA-DAVIS	PHD CANDIDATE
WILLIAMS, LESLEY	CHEM ENG	SPELMAN C	COLLEGE SOPHOMORE
WILLIAMS, TROY	PHYSICS	SOUTHERN U	COLLEGE SENIOR
WILSON, KIMBERLY	MECH ENG	TENNESSEE STATE U	COLLEGE JUNIOR

Offer and Confirmation Letter

NASA/OAI
Collaborative Aerospace Internship and
Fellowship Program

April 20, 1995

Dear :

On behalf of the Ohio Aerospace Institute and the NASA Lewis Research Center, it is a pleasure to inform you that you have been selected for an internship in the 1995 NASA/OAI Collaborative Aerospace Internship and Fellowship Program. As usual, the competition was very intense and you are to be congratulated for having been selected. This internship is intended to provide you with research oriented educational experiences to complement your academic field of study.

The enclosed assignment sheet indicates the organization that will host you during your internship, the activities/responsibilities planned for you and the Lewis employee who will serve as your mentor. Your mentor will provide you with guidance and assistance throughout your internship. The length of tenure will be 10 weeks and your starting date is planned for May 30, 1995.

Your salary for the full internship period will be $2500.00. This amount will be paid by the Ohio Aerospace Institute in equal biweekly installments of $500.00 beginning two weeks after you start your tenure.

Because of the tight schedule and intense competition for internships, we must have a response from you within five days of receipt of this letter if you wish to participate in the summer program. If you fail to respond by that time, we will assume you are unavailable and this offer will be withdrawn. Please notify us by telephone, (216) 962-3034 or (216) 433-5104, of your acceptance of this offer, and specifically confirm your dates of participation. In addition, please sign and return the enclosed addendum to the Ohio Aerospace Institute, Attention: Ashanti Trent, Department of Resident Programs, 22800 Cedar Point Road, Cleveland, Ohio 44142; acknowledging your acceptance of the terms and conditions of this offer. Local housing information is available to you upon request.

Please do not hesitate to contact us at the numbers identified below. Alternately, you may wish to contact Ashanti Trent at (216) 962-3034 or Rita Clement at (216) 433-5104 if you have any questions about the program. If you require more information about your responsibilities as an intern, we suggest that you contact your mentor at the number given on the enclosure.

Sincerely,

Theo G. Keith, Jr., Ph.D.
Director of Workforce Enhancement
(216) 962-3030

Sylvia Merritt
Program Manager
(216) 433-5574

Enclosure

Ohio Aerospace Institute • Dept. of Resident Programs
22800 Cedar Point Road • Brook Park, Ohio 44142
Phone: (216) 962-3032

NASA Lewis Research Center
The Office of Educational Programs, MS 7-4
21000 Brookpark Road • Cleveland, Ohio 44135
Phone: (216) 433-6159

NASA/OAI
Collaborative Aerospace Internship and
Fellowship Program

ADDENDUM TO OFFER LETTER

Terms and Conditions

Although your NASA internship assignment is your main focus for the summer, a variety of educational/research oriented programs have been scheduled to make your summer experience more valuable. The NASA/OAI Collaborative Aerospace Internship and Fellowship Program is ranked among the best; therefore, expectations of our interns are high. Accordingly, it is expected:

- that you will apply yourself to your assigned work and take advantage of the opportunities afforded to you by your mentor, your co-workers and scheduled summer activities/events,
- that you will dress, present and carry yourself in a professional manner at all times,
- that you will complete the 12/14 week assignment,
- that you will participate in the poster session at the Research Symposium,
- that you will attend designated technical programs, short courses and seminars,
- that you will follow payroll schedule (submit timesheets as scheduled, pick-up checks, etc.),
- that you will complete close-out procedures (final report, questionnaire, housing survey) and return badge,
- that you will attend networking activities and
- that you will maintain a positive attitude.

I acknowledge and accept the terms and conditions of this offer.

Signature: _____ Date: _____

cc: 5110/Mark D. Bethea
OAI/Ashanti Trent
9200/Official File

Ohio Aerospace Institute • Dept. of Resident Programs
22800 Cedar Point Road • Brook Park, Ohio 44142
Phone: (216) 962-3032

NASA Lewis Research Center
The Office of Educational Programs, MS 7-4
21000 Brookpark Road • Cleveland, Ohio 44135
Phone: (216) 433-6159

UFO -

INTERNSHIP/FELLOWSHIP ASSIGNMENT

Intern/Teacher: _____

Org Code: 5110 Branch: Processing Science + Technology Branch

Division: Materials Division

Mentor: Mark D. Bethea Telephone: (216) 433- 8161

Activities/Responsibilities: _____

Under thermal cycling conditions NiAl is considered one of the most oxidation resistant materials known but only when microalloyed with small amounts of Zr. However, Zr tends to embrittle polycrystalline NiAl at room temperature and increases the brittle-to-ductile transition temperature by over 500 K. Therefore, it would be important to find an alloying addition that will not only improve oxidation resistance but will not negatively impact mechanical properties.

Therefore, an independent program has been set up for Anita Hairston to investigate the effect of Ce (as a replacement for Zr) on mechanical properties and oxidation behavior of NiAl. Testing will involve tensile testing as a function of temperature between room temperature and 1200 K, to determine the brittle-to-ductile transition temperature, yield and fracture strength as a function of temperature, and the fracture behavior of NiAl. The temperature dependent mechanical properties of NiAl(Ce) will be augmented if necessary by further compression testing. Fracture behavior will also be determined by performing fracture toughness tests on the NiAl(Ce) alloy at room temperature. In addition, the cyclic oxidation behavior of the NiAl(Ce) alloy will be determined. All these experiments will be performed by Anita under the direction of NASA personnel.

The advantage of this program for Anita is that the entire program will belong to her to proceed with at any pace she desires. Along the way she will learn organizational skills, a great deal about materials science including various mechanical testing procedures and about the oxidation behavior of metals.

NASA/OAI
Collaborative Aerospace Internship and
Fellowship Program

May 3, 1995

Dear :

This confirms your acceptance of a summer internship at the NASA Lewis Research Center in the NASA/OAI Collaborative Aerospace Internship and Fellowship Program. You are scheduled to begin on May 15 for a period of 12 weeks. Please contact us immediately if your start or end dates change.

The main entrance to the Lewis Research Center is on the south side of Brookpark Road at the western end of Cleveland Hopkins International Airport. It can be reached from the Grayton Road exit of Interstate 480. Two maps are enclosed to assist you.

Plan to arrive at 8:00 a.m. on your starting date. Stop briefly at the main gate by the guardhouse for directions to the Administration Building and the Hanger Parking Lot which is located just across Taylor Road. For identification and admission to the Center, you must bring this letter with you.

The receptionist at the entrance of the building will direct you to the room where we will issue you a badge and conduct an orientation meeting. The meeting will begin at 8:30 a.m.

All interns/fellows will be regarded as professionals for which business dress is always appropriate. Shorts are strictly prohibited at your worksite. In addition to performing your internship assignment, you can expect to participate in professional and social activities. These activities will be briefly described at the orientation.

Please contact your mentor prior to your arrival so you can begin to prepare for your internship at Lewis. We look forward to your arrival. If you wish additional information, please do not hesitate to contact Rita Clement at (216) 433-5104 or Ashanti Trent at (216) 962-3034.

Sincerely,

Theo G. Keith

Dr. Theo G. Keith, Jr.
Director for Resident Programs

Sylvia A Merritt

Sylvia Merritt
Program Manager

Enclosures

cc: 5140/William R. Jones, Jr.
OAI/Official File
9200/Official File

Ohio Aerospace Institute • Dept. of Resident Programs
22800 Cedar Point Road • Cleveland, Ohio 44142
Phone: (216) 962-3032

NASA Lewis Research Center
The Office of Educational Programs, MS 7-4
21000 Brookpark Road • Cleveland, Ohio 44135
Phone: (216) 433-6159

Research Symposia/Poster Sessions I & II

NASA/OAI Collaborative Aerospace Internship and Fellowship Program

APPLICATION FOR 1995 SUMMER INTERNSHIP

Please *type* or *print* in black ink only

Name: _____ Social Security Number: _____

Date of Birth: _____ Place of Birth: _____

Home Address: ☐ Work Address ☐ School Address

_____ _____

_____ _____

_____ _____

Telephone: ( ) _____ Telephone: ( ) _____

Please indicate address you would like correspondence mailed to: (Give dates only if both are checked.)

☐ Home From: _____ To: _____ ☐ School From: _____ To: _____

Current School:

☐ High School ☐ College ☐ University Name: City, State: Date Began: Planned Graduation Date:

_____ _____ _____ _____

If you have applied to attend an undergraduate or graduate college/university for the fall 1995, please provide the following:

Planned College or University: Field of Study/Targeted Degree: Status of Application:

_____ _____ ☐ Pending ☐ Accepted

Check here if you will be a 1995 high school graduate ☐ (12)

Cumulative Grade Point Average: _____ out of 4.0
(Minimum requirement: GPA 3.0 on a 4.0 grading scale)

Credit hours earned as June 1995:
_____ out of _____

Academic Major: _____

Academic Level as of **Fall 1995**: (Check one)

☐ (13) College Freshman
☐ (14) College Sophomore
☐ (15) College Junior
☐ (16) College Senior
☐ (17) Master Student
☐ (18) PhD Student

For placement purposes, please indicate the field of science or engineering in which you would like to work. Dual majors must indicate a first and second choice, in order of preference.

☐ (1) Aero/Astro Engineering
☐ (2) Architecture
☐ (3) Chemical Engineering
☐ (4) Chemistry
☐ (5) Civil Engineering
☐ (6) Computer Science/Engineering
☐ (7) Electrical Engineering
☐ (8) Environmental Science/Engineering
☐ (9) Industrial Engineering
☐ (10) Materials/Structures
☐ (11) Math
☐ (12) Mechanical Engineering
☐ (13) Nuclear Engineering
☐ (14) Optics
☐ (15) Physics
☐ (16) Polymers
☐ (17) Systems Engineering
☐ (18) Other: _____

OFFICE USE ONLY

Date Received: _____ 13 14 15 16 17 18 Bi-Weekly Salary: $ _____

Date Processed: _____ 12 14 PR Requirement: $ _____

Background Information

Work Experience:

Special Training or Skills:

Honors or Awards:

Hobbies and Interests:

Internship Research Interests:

Additional Information:

Narrative Statement

In the space below, write a narrative statement that indicates your internship research interests, and how you and NASA will benefit if you are selected.

Period of Tenure Requested: ☐ 12 Weeks ☐ 14 Weeks

From: (Monday) _____ (Date) To: (Friday) _____ (Date)

Did you apply for this program in 1994? ☐ Yes ☐ No

Have you previously participated in this program? ☐ Yes ☐ No

Check any of the following NASA or Federal programs you have participated in:

☐ (1) NASA SHARP Program
☐ (2) NASA Lewis Explorer's Post
☐ (3) NASA Lewis Shadowing Program
☐ (4) NASA Lewis SYETP Program
☐ (5) NASA Lewis/East Tech Partnership Program
☐ (6) KEYS Program
☐ (7) Ohio Space Scientists of Tomorrow Program
☐ (8) Space Science Student Involvement Program
☐ (9) OPM National Science Scholar
☐ (10) The N.A.S.A. Project at C.C.C.
☐ (11) Undergraduate Student Researchers Program
☐ (12) Other:

Is any member of your family employed at NASA Lewis Research Center? ☐ Yes ☐ No

If Yes, identify the employee and the relationship: _____

References other than the faculty member providing written endorsement (name, title, telephone):

1. _____

2. _____

Please indicate whether a short-term housing list is desired. ☐ Yes ☐ No

Do we have your permission to include your name, address and phone in a listing to send to students interested in sharing housing? ☐ Yes ☐ No

Transcripts

College-bound high school students: attach a transcript of all high school courses completed and a list of courses currently being taken.

Undergraduate students: attach a transcript of all college courses completed and a list of courses currently being taken.

Graduate students: attach a complete undergraduate transcript, a transcript of all graduate courses completed, and a list of courses currently being taken.

Copies of unofficial transcripts already in your possession are acceptable. It is not necessary to have your school send official transcripts.

Applicants will be notified of the results by mail by April 11, 1995.

I certify that the information provided herein is complete and correct. I am a United States citizen.

Signature: _____ Date: _____

Send the completed application to:

NASA/OAI Internship/Fellowship Program
Ohio Aerospace Institute
Department of Workforce Enhancement
22800 Cedar Point Road
Cleveland, Ohio 44142
Attn: Sylvia Thompson

NASA
Lewis Research Center

OAI Ohio Aerospace Institute
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NASA/OAI Collaborative Aerospace Internship and Fellowship Program

BACKGROUND SURVEY

(Completion of this form is optional)

Name: _____ School: _____

☐ Student ☐ Teacher

How did you learn of the internship and fellowship program?

☐ (a) Previous Participation
☐ (b) Acquaintance who was an intern and/or a teacher
☐ (c) Inquiry to NASA about summer employment
☐ (d) Group visit to the Center
☐ (e) Relative who works for NASA or a NASA contractor
☐ (f) Acquaintance who works for NASA or NASA contractor
☐ (g) Participation in another NASA Program
☐ (h) Faculty member or school official
☐ (i) Other: _____

Please review the categories below and categorize yourself by checking the appropriate items.

☐ (1) American Indian or Alaskan Native
☐ (2) Asian or Pacific Islander
☐ (3) African-American
☐ (4) White
☐ (5) Hispanic
☐ (6) Other: _____

☐ (M) Male
☐ (F) Female

Disabled: ☐ Yes ☐ No
If Yes, please indicate disability: _____

The information solicited on this form will not be available to those responsible for rating applications but will be used by NASA primarily to determine the extent to which various populations are represented in the applicant pool.

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Lewis Research Center

Fill in your name on the endorsement form, separate it from the application form and give it, along with the enclosed envelope, to the faculty member who will provide a recommendation based on your academic ability and interpersonal skills. Because the endorsement letter must be returned with the application, set a predetermined date with the faculty member when you can pick up the letter.

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FACULTY ENDORSEMENT

Student: _____

The above named student is applying for a summer internship at the NASA Lewis Research Center. The internship, if awarded, will provide an opportunity for the student to work with professional staff in an environment not unlike an academic research setting. Your endorsement of the student's participation is requested in consideration of his or her potential to both contribute to and benefit from the experience. You may use the space below or use a separate letter. Please respond by January 31, 1995.

This form should be returned by student with application in the enclosed envelope.

I ☐ recommend, I ☐ do not recommend, the above student for an internship at the NASA Lewis Research Center.

Signature: _____ Date: _____

Title: _____ Telephone: _____

Address: _____

_____

***** Must be a faculty member in applicant's department or area of expertise*****

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NASA/OAI Collaborative Aerospace Internship and Fellowship Program

1995 SUMMER INTERNSHIP FOR STUDENTS OF SCIENCE OR ENGINEERING

at the

NASA Lewis Research Center
Cleveland, Ohio

Program Description

Twelve or fourteen week internships for students of science or engineering are available for a choice of starting dates during the summer of 1995 at NASA Lewis Research Center, Cleveland, Ohio. The internships are offered under the auspices of the NASA/OAI Collaborative Aerospace Internship and Fellowship Program, a collaborative undertaking by the Office of Educational Programs at the NASA Lewis Research Center and the Resident Programs at the Ohio Aerospace Institute (OAI) .

The internships are intended to provide students with introductory professional experiences to complement their academic programs. Interns are given assignments in research and development projects under the personal guidance of NASA professional staff members. Assignments are commensurate with the academic level and field of study of the student.

Interns are integrated into the day-to-day activities of the Center to the greatest extent possible. A certain amount of time is devoted to a program of scheduled professional and social events.

Lewis Research Center

The NASA Lewis Research Center occupies a 350-acre site adjacent to the Cleveland Hopkins International Airport. It provides a campus-like environment with over 170 buildings and structures, including offices, laboratories, wind tunnels, test cells, computing centers, and other research facilities. These structures are supported by an extensive computer network, including computational, computer support, and communications facilities. Approximately 4,000 civil service, contractor and visiting personnel, almost half of whom are scientists or engineers, work at the site.

The Lewis Research Center focuses its Research and Development efforts in four programmatic areas: Aeropropulsion, Space Propulsion, Space Power and Space Science & Applications. This work includes background research in metallurgy, basic chemistry, plasma physics, fuels, lubrication, fluid flow, heat-transfer, electronics, control dynamics, and other areas related to propulsion, energy, and communication systems.

The Ohio Aerospace Institute

The Ohio Aerospace Institute is a university, industry, and government consortium established to promote collaborative research, graduate and continuing education, and the adaptation of advanced technology for industry.

The consortium includes nine Ohio universities, NASA Lewis Research Center in Cleveland, Wright-Patterson Air Force Base in Dayton, and major corporations.

OAI's mission is to foster the growth and competitiveness of high technology industry in Ohio and to help graduate more students in science and engineering.

In October 1992, this non-profit consortium opened a new building next to the NASA Lewis Research Center and Cleveland Hopkins International Airport. The $10.7 million three-story glass-and-steel structure will offer 70,000 square feet for research and educational purposes.

Eligibility

Internships are available only to U.S.citizens who are full-time students in good academic standing pursuing a baccalaureate or higher degree in a field of science or engineering at an accredited college or university throughout the United States. College-bound high school graduates or 2-year college students with demonstrable plans to pursue baccalaureate degrees are also eligible. Qualified minority and female students, as well as students with disabilities, are encouraged to apply. **Students must have a cumulative GPA of 3.0 on a 4.0 scale.**

Application

DEC 1

Students seeking internships must submit an application to the Ohio Aerospace Institute. All students are required to work for a period of 12 or 14 weeks. The period of tenure is determined by the students and has no effect on selection. The internships do not provide for vacation time and such time should be scheduled outside the tenure period. Students are required to work a forty hour per week regular tour of duty and will not be permitted to take any summer classes outside of Lewis during the work period. Students are expected to adhere to the tenure period and dates specified on their application. Application forms or additional information may be obtained by contacting:

NASA/OAI Internship/Fellowship Program
Ohio Aerospace Institute
Department of Workforce Enhancement
22800 Cedar Point Road
Cleveland, Ohio 44142
Attn: Sylvia Thompson
Telephone: (216) 962-3170 x 5006

Applications must be postmarked no later than January 31, 1995.
A complete application package must include:

1. A completed and signed application
2. Transcript(s)
3. Faculty endorsement
4. List of courses currently being taken *(Winter/Spring 1995)*

Applicants will also be notified of **incomplete applications** and have the opportunity to submit missing information on or before, but no later than, **January 31, 1995.** *(Faxed copies are unacceptable)*
All applications postmarked after January 31st will not be considered.

All applicants not selected to participate in the program will be notified by April 11, 1995.

Selection Criteria

Selection in this program is very competitive and is based on the following:
1. R & D organizational needs
2. Academic level and relative coursework
3. Performance background and research interests

Salaries

Interns receive a biweekly salary for their appointments. The amount of the salary depends on the academic standing achieved by the student at the time tenure begins. For 1995, the biweekly salary payments are:

Academic Standing:	Freshman	*Sophomore*	Junior	*Senior*	Masters Student	*Doctoral Student*
Amount:	$ 500	$ 560	$ 640	$ 720	$ 1100	$ 1430

The normal statutory withholdings will be withheld. The tax portion withheld will depend on the tax status of each individual.

Travel Allowances

One round trip travel reimbursement is provided to students whose city of permanent residence is more than 50 miles from Cleveland and who relocate for the program. Reimbursement is based on shortest-route mileage at 25 cents per mile and is paid after tenure begins.

Housing

Students must make their own housing arrangements. This program does not provide living expenses. If a list of short-term accommodations is desired, check the appropriate box on signature page.

Please understand that the housing list has been assembled for your convenience from responses to newspaper advertisements we have placed in local newspapers for accommodations for our summer visitors. We have not checked these accommodations and do not advocate them over other accommodations you may find on your own.

Schedule

Applications must be postmarked no later than January 31, 1995 to assure consideration.

Application Deadline: January 31, 1995
Applicant Notification: April 11, 1995

		End Dates 12 Week	14 Week
Possible Starting Dates:	May 15, 1995	August 4, 1995	August 18, 1995
(Monday, May 29 is a holiday)	May 30, 1995	August 18, 1995	September 1, 1995
	June 12, 1995	September 1, 1995	September 15, 1995

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APPLICATION PACKAGE CHECKLIST

Before completing this application, you should read it thoroughly. Special attention should be given to eligibility requirements, dates and deadlines.

Required information: (Check when completed)

- ❑ *Signed and completed Application*
- ❑ *Faculty Endorsement*
- ❑ *Transcripts*
- ❑ *List of courses to be taken in Winter/Spring 1995*
- ❑ *Background Survey (optional)*

ALL COMPLETED AND SIGNED APPLICATIONS MUST BE POSTMARKED BY JANUARY 31, 1995 and submitted to:

NASA/OAI Internship/Fellowship Program
Ohio Aerospace Institute
Department of Workforce Enhancement
22800 Cedar Point Road
Cleveland, Ohio 44142
Attn: Sylvia Thompson

Please be advised that incomplete applications will not be processed.